

Title: Field Day Fundraiser

Brief Overview:

This lesson involves students in real-life problem solving and decision making situations. They will collect, analyze, and interpret data to determine which souvenir to purchase for Field Day. Faced with the problem of having to raise money to purchase the souvenir, the students will calculate information from a chocolate chip cookie recipe and determine the amount of cookies needed to raise enough money to purchase the souvenirs. As a final activity, the students will write a letter using mathematical reasoning to persuade their principal to allow them to sell chocolate chip cookies during lunch time.

Link to Standards:

- **Problem Solving** Students will demonstrate the ability to use problem solving strategies to solve mathematical problems in a cooperative atmosphere and analyze data to assist them with making appropriate choices.
- **Communication** Students will demonstrate the ability to read, reflect, discuss cooperatively, and write to justify their answers, interpret graphs and charts, and persuade others to agree with their ideas.
- **Reasoning** Students will demonstrate the ability to reason mathematically. They will explain their thinking, rationalize their answers, and build arguments.
- **Connections** Students will demonstrate the ability to connect mathematics to real-life situations such as computing money problems and manipulating fractions in recipes.
- **Number and Number Relationships** Students will demonstrate the ability to use arithmetic operations with technology, where appropriate. They will relate money/decimals to real-life situations.
- **Statistics** Students will demonstrate the ability to collect, organize, and display data on tally charts and bar graphs and will interpret information obtained from displays. They will write responses based upon the information.

Grade/Level:

Grade 3-4

Duration/Length:

This lesson will take 5-6 class periods (45 min. each).

Prerequisite Knowledge:

Students should have working knowledge of the following skills:

- constructing tally charts and bar graphs
- adding and subtracting money
- calculating decimal place value
- constructing a number sentence from a set of data
- writing a persuasive letter

Objectives:

Students will:

- work cooperatively in groups.
- add and subtract with regrouping.
- multiply with two or three digit by one digit- use regrouping.
- apply money in real-life problem solving situations.
- be able to use various strategies to solve problems.
- write and solve number sentences.
- collect, organize, display data for given situations using a bar graph.
- interpret and describe information obtained from a bar graph and chart.
- evaluate a situation and give appropriate support for their answer.

Materials/Resources/Printed Materials:

- Calculators for each student
- Student Resource Sheets 1-15
- Overheads of Student Resource Sheets 1-15

Performance Assessment--Development/Procedures:**Task 1: Costs**

- Display on the board or overhead definitions for unit cost and total cost. Unit cost: price per item. Total cost: unit cost multiplied by the number of students.
- Have students arranged in cooperative groups of four. They will remain in these groups throughout the entire activity.
- Have calculators available throughout the entire performance assessment.
- Pass out student packet and read the following problem with the students (Student Resource 1-3):

Field Day is coming up and the P.T.A. has given us money to buy each student a souvenir for the event: baseball cap, water bottle, T-shirt, or visor. We will look at these four items and decide as a class which one to purchase.

- Have the students individually read over the directions for each question in Task 1. Reinforce directions by reviewing them with the class. Tell students that they are responsible for 4 activities and have them repeat the directions in their own words.

- Once the groups have completed their graphic organizers and responded to the question, meet together as a group and discuss their answers. Encourage students to share with the class how they calculated their answers. Discuss and list the various strategies shared by the students.

Task 2: Class Survey

- Arrange students in their cooperative groups and briefly review yesterday's lesson.
- Complete the tally chart with the students (Student Resource 4).
- Students will brainstorm in their cooperative groups the criteria needed for a bar graph (Student Resource 4).
- The students will then graph the results on a bar graph (Student Resource 5).
- Once the groups have finished making their graphs, they will need to evaluate the graph according to the criteria they have determined within their cooperative group (Student Resource 6).

Task 3: Fundraising

- Arrange students in their cooperative groups and briefly review yesterday's lesson.
- The teacher will need to introduce the term profit to the class. Use the following example on the overhead to discuss what profit is:

Andrew went to a baseball card show and bought a Cal Ripken rookie card for \$2.00. When he got home his brother Daniel wanted the card and offered to buy it for \$4.00. Andrew sold it to his brother for \$4.00.

At this point ask students how much money Andrew made from selling the baseball card.

As a class, discuss the fact that Andrew only made a profit of \$2.00 because he bought the card for \$2.00.

Write the following number sentence on the board:

$$\begin{array}{ccccccc} \$4.00 & - & \$2.00 & = & \$2.00 \\ \text{resale price} & & \text{original} & & \text{profit} \\ & & \text{cost} & & \end{array}$$

- Explain to the students that the P.T.A. will only donate \$40.00 to our class, and they will need to calculate how much more money is needed to purchase the item.
- Students will work in their cooperative groups to decide whether they have enough money and to calculate how much more money is needed (Student Resource 7).
- Given the chocolate chip cookie ingredient prices, the students will determine the cost of one batch of cookies -- \$ 4.75 per batch (Student Resource 8).

- Students will analyze data in question 1-3, Task Three and estimate how many batches of cookies are needed to raise enough money to purchase the souvenirs (Student Resource 9).

Task 4: Persuading the Principal

- Explain to the students that they will be going through the writing process for this task.
- Have students open to Student Resource 11 and read aloud the following writing prompt:

The P.T.A. has offered to donate \$40.00 to our class to buy a souvenir. We will need to have a fund raiser to get the rest of money needed to purchase the souvenir. Your teacher has decided to have the class bake chocolate chip cookies to sell at lunchtime.

Write a letter to your principal to persuade him to let your class sell cookies at lunchtime. Your letter should include three strong arguments for selling the cookies and be written in proper letter format. Use information from tables, graphs, and reflection questions to support your requests.

- As a whole class, generate the criteria for an excellent letter (Student Resource 11).
- Have students complete a graphic organizer (Student Resource 12).
- Students will then work individually to write a draft letter (Student Resource 13).
- Students will peer conference with a partner and edit and revise their letters (Student Resource 14).
- Students then will work individually to write their final letters (Student Resource 15).

Evaluation:

- The teacher will evaluate the students bar graphs and compare their own evaluation of the graph to the students evaluation. Furthermore, the teacher will evaluate the reflection questions and persuasive letters for mathematical reasoning and the ability to use information from tables, graphs, and reflection questions to support their requests in the persuasive letter.

Extension/Follow Up:

- Students may calculate the ingredients in the chocolate chip cookie recipe to double the recipe.
- Students may use *Graph Power* to graph the data.
- Students may plan their own fundraiser.
- Read, [How the Second Grade Got \\$ 8,205.50 to Visit the Statue of Liberty](#), and discuss the various strategies used by this class to obtain their goal. Using chart paper write student responses.
- Students may compare/contrast decimals and fractions using a Venn Diagram.

Authors:

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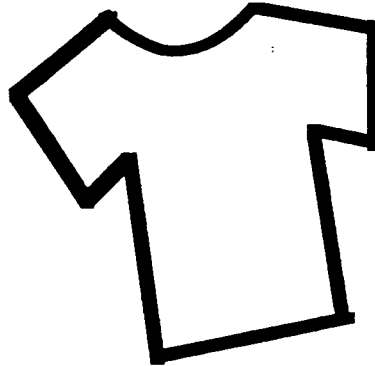
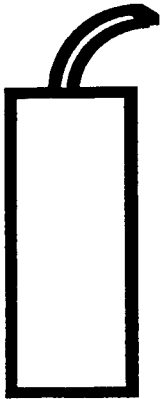
Jodi Kam
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Name _____

Date _____

Field Day Fundraiser

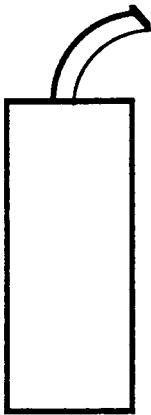
Field Day is coming up and the P.T.A. has given each class money to buy a souvenir for the event. You have a choice of: a baseball cap, a water bottle, a T-shirt, or a visor.



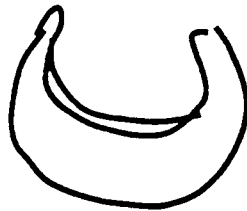
Task 1: Costs

1. In order to make an informed decision you will need to calculate how much it will cost for the whole class to buy each souvenir item. Fill in the table to record the information.

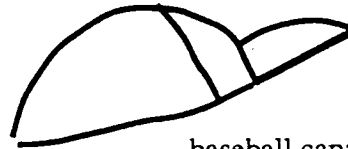
Souvenir	Unit Cost	No. of students	Total Costs



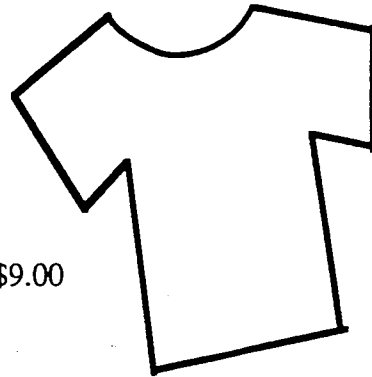
water bottle: \$ 3.00



visor: \$ 4.00



baseball cap: \$ 7.00



t-shirt: \$9.00

2. Order the souvenirs from the least expensive to the most expensive.

1. _____

3. _____

2. _____

4. _____

3. Write a number sentence to show how you calculated the class cost for each item.

baseball cap _____

water bottle _____

T-shirt _____

visor _____

4. *Reflection Question* : In order to find the cost of each item I used the following strategies...

Task 2: Class Survey

Now that you know how much it will cost to buy each souvenir, you need to decide which souvenir you want to get.

1. Take a class survey to find out which souvenir is the most popular one and fill in the tally chart to record your information.

Title

Souvenir	Tally Marks	Number
baseball cap		
water bottle		
t-shirt		
visor		

2. If you are going to do an excellent job of making a bar graph, what kinds of things will you do?

Criteria for an Awesome Bar Graph

<div style="display: flex; align-items: center;"> <div style="border: 1px solid black; width: 40px; height: 20px; margin-right: 10px;"></div> <div style="border-bottom: 1px solid black; flex-grow: 1;"></div> </div> <div style="display: flex; align-items: center;"> <div style="border: 1px solid black; width: 40px; height: 20px; margin-right: 10px;"></div> <div style="border-bottom: 1px solid black; flex-grow: 1;"></div> </div> <div style="display: flex; align-items: center;"> <div style="border: 1px solid black; width: 40px; height: 20px; margin-right: 10px;"></div> <div style="border-bottom: 1px solid black; flex-grow: 1;"></div> </div> <div style="display: flex; align-items: center;"> <div style="border: 1px solid black; width: 40px; height: 20px; margin-right: 10px;"></div> <div style="border-bottom: 1px solid black; flex-grow: 1;"></div> </div> <div style="display: flex; align-items: center;"> <div style="border: 1px solid black; width: 40px; height: 20px; margin-right: 10px;"></div> <div style="border-bottom: 1px solid black; flex-grow: 1;"></div> </div>	<p>Scoring Guide</p> <div style="margin-bottom: 10px;"> <div style="display: flex; align-items: center;"> <div style="font-size: 2em; margin-right: 5px;">✓</div> <div style="display: flex; flex-direction: column; align-items: center;"> <div style="font-size: 1.5em; margin-bottom: 2px;">+</div> <div style="font-size: 1.5em;">completed</div> </div> </div> </div> <div style="margin-bottom: 10px;"> <div style="display: flex; align-items: center;"> <div style="font-size: 2em; margin-right: 5px;">✓</div> <div style="display: flex; flex-direction: column; align-items: center;"> <div style="font-size: 1.5em; margin-bottom: 2px;">needs</div> <div style="font-size: 1.5em;">improvement</div> </div> </div> </div> <div> <div style="display: flex; align-items: center;"> <div style="font-size: 2em; margin-right: 5px;">✓</div> <div style="display: flex; flex-direction: column; align-items: center;"> <div style="font-size: 1.5em; margin-bottom: 2px;">-</div> <div style="font-size: 1.5em;">incomplete</div> </div> </div> </div>
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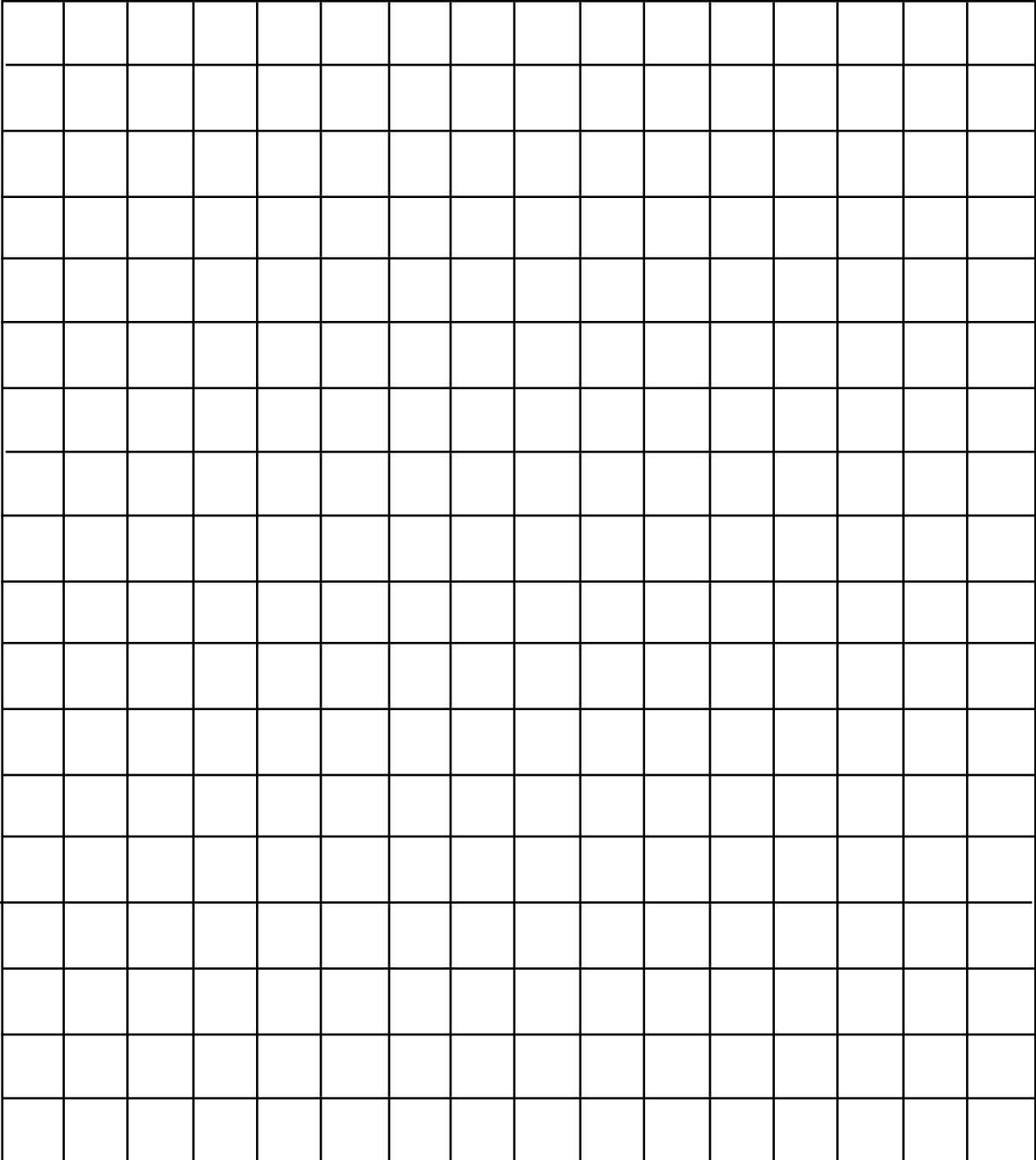
AFTER your criteria is evaluated, you will give yourself a Holistic SCORE

<----->

1 point	2 points	3 points	4 points
<u>Needs Improvement</u>	<u>Okay</u>	<u>Good Job!</u>	<u>Awesome!!!</u>

3. Using the information in the tally chart, create a bar graph. Be sure to following the generated criteria for an "Awesome Bar Graph"

Title



4. *Reflection question:* What conclusions can you make from the tally chart and bar graph? Which souvenir will the class get? How do you know? Explain your answer.

Task 3: Fundraising

The P.T.A. has told us that they can only donate \$40 to each class for their souvenir.

1. *Reflection Question:* Based on the total costs found in Task 1, will you have enough money to buy the souvenir that you want? Show your work and explain how you got your answer.

2. *Reflection Question:* Since you do not have enough money to buy your souvenirs, your teacher has decided to have a cookie bake sale to raise the rest of the money. Write a number sentence to show how much money you will need to raise.

In order to make the cookies, you will need to know what ingredients will be used and how much they cost.

Chocolate Chip Cookies Price List

Serving: 48 cookies

flour	\$ 0.25
baking soda	\$ 0.02
salt	\$ 0.01
butter	\$ 1.25
sugar	\$ 0.21
brown sugar	\$ 0.30
vanilla	\$ 0.27
eggs	\$ 0.15
chocolate chips	\$ 2.29

3. *Reflection Question:* Using the price list, show and explain how you would determine the cost of one batch of chocolate chip cookies.

4. *Reflection Question:* Your class has decided to sell the cookies with 3 in each Ziploc bag for \$ 1.00. What is your profit (how much money would you make) for selling one batch of cookies? Explain your answer. ***Note: Make sure you subtract the expenses (the cost of the ingredients).**

5. Based on the profit you make for one cookie batch, fill out the chart to find out the profit for more batches.

No. of batches	Profit
1	
2	
3	
4	
5	

6. *Reflection Question:* How many batches will you need to sell in order to buy the souvenir your class wants? Explain how you got your answer using pictures, numbers, and/or words.




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You will write a letter to your principal to persuade him to let your class sell cookies at lunchtime. Your letter should include three reasons why he should let you sell the cookies and be written in proper letter format. Use information from tables, graphs, and the reflection questions to support your answer. Remember to use proper grammar, spelling and punctuation. Since this letter will be read by others you will want to use your best handwriting.

1. If you are going to do an excellent job of writing a persuasive letter, what kinds of things will you do?

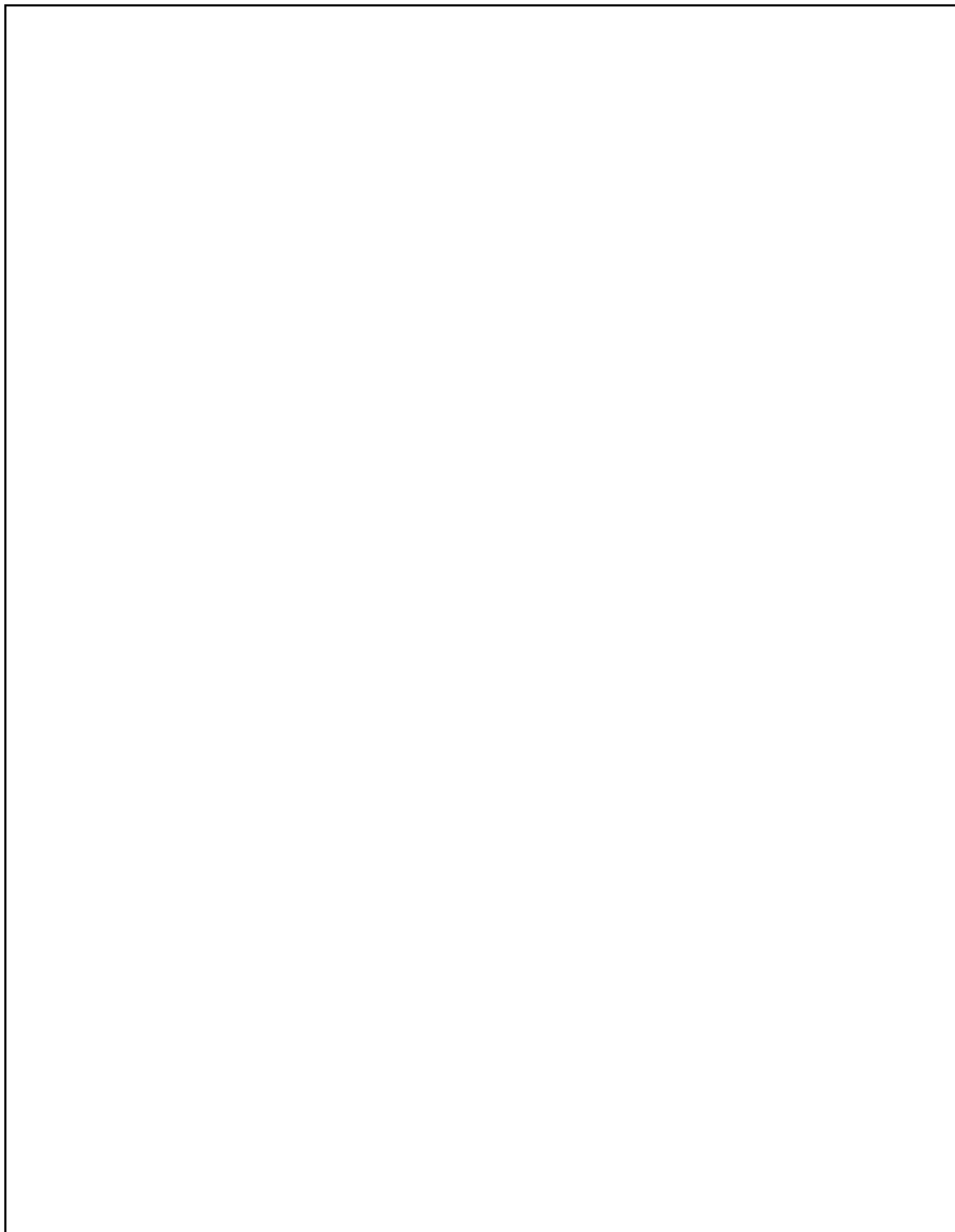
Criteria for an Awesome Letter

<input type="checkbox"/>	_____	Scoring Guide  + completed  needs improvement  - incomplete
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AFTER your criteria is evaluated, you will give yourself a Holistic SCORE

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	1 point	2 points	3 points	4 points	
	<u>Needs Improvement</u>	<u>Okay</u>	<u>Good Job!</u>	<u>Awesome!!!</u>	

2. Use the space below to organize your thoughts. You may choose to create a list or web.

A large, empty rectangular box with a thin black border, intended for students to organize their thoughts, create a list, or a web.

3. Write a rough draft of your letter.

[illegible]

Peer Conference

P Praise What do you like about my letter?

Q Question What question do you have about my letter?

P Polish What can I do to improve my letter?

3. Write the final draft of your letter.

[illegible]